# Kowshik Chilamkurthy

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Ask my telegram bot: KnowKowshik
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## Education

**Indian Institute of Technology, Madras** *July 2014 - May 2018*
*Bachelors of Technology, Civil Engineering*

**Minor** : Mathematics

**Key Courses** : Maths Logic, Combinatorial Optimization, Decision Models, Computer Applications in Highway Engineering, Analytical Techniques in Transportation

## Professional Experience

**Theremin.ai, Fractal Analytics** *Feb 2019- present*
*Data Scientist, Quantitative Trader*

- Implemented **Machine learning**, **Deep learning** and **Reinforcement Learning** algorithms for devising different trading strategies and managed **models in production**
- Extensively researched and developed custom **Deep Q-learning, Policy Gradient and Deep Deterministic Policy Gradient** agents for trading applications

## Patents and Publications

**A Statistical Overview of Sand Demand in Asia and Europe** *July 2016*
*UKIERI Conference, Goa*

**Automation of Glass Fragmentation Analysis Using Image Processing(Not attended)** *Jan 2017*
*ICCEN 2017, Australia*

**Modelling Operational Conditions to Predict Life Expectancy and Faults of Vehicle Components in a Fleet** *Sep 2018*
*Patent number: USA20200090419, Approved*

## Internship Experience

**Conduent Research Labs, Banglore** *Autumn 2017*
*Research Internship, ML & Statistics team*

- Surveyed existing literature to implement a **Point Process Algorithm** for detection of vehicle faults
- Experimented extensively with **Neural Hawkes Process** and optimized its python implementation

**Xerox Research Labs, Banglore** *Summer 2017*
*Data Science Internship, ML & Statistics team*

- **Patented** the idea of **Vehicle-Route Analysis** and point process models for fault detection
- **Best Internship Project - 2nd Runner up**. Communicated requirements and results with clients.
- Led an initiative to extract **insightful features from unstructured data** (GPS & Tabular). Employed different methods to detect anomalies in data (PCA, KMeans).
- Developed pipelines to integrate large and diverse databases and implemented wide range of **Fault Detection Models** using extracted features

**Nadhi Information Technologies, Chennai** *Autumn 2016*
*Winter Internship*

- Architected and implemented analytics and machine learning components for *nPulse* product
- **Integrated** machine learning plugin written in Python into existing Java product code

**Light House Analytics, Pune** *Summer 2016*
*Data Science Internship*

- Engineered features, selected parameters and calibrated regression models for accurate **TRP Ratings Prediction** of advertisements for **Viacom Inc**
- Designed an algorithm for **Advertisement Schedule Optimization** based on TRP rating predictions. Implemented in Advanced Process OPTimizer (**APOPT**) software package

– Incorporated the **Business Constraints** of advertisements into schedule optimization algorithm

**FOSSEE Project, IIT Bombay** *Autumn 2015*
*Winter Internship, Prof. Prabu Ramachandhran*

– Developed and opensourced systematic Python code for solving material mechanics problems

## Blogging and Open Source

**Data Science Content Writer**
*Towards Data Science, Medium*

– Published 35+ innovative and educative blogs on **Reinforcement learning, Game Theory, Point Process Models and Survival Models** with cumulative viewership of 20K+ views

– Popular blogs on **solving Covid-19 using RL** garnered significant interest from academia, industry and governments for potential collaboration

**Reinforcement Learning Annotated Papers**
*Open Source, github.com*

– Compiled and hand annotated **30+** ground breaking Reinforcement Learning research articles

– Covered traditional methods like **DQN, PG, A2C** to advanced topics like **Distributional-RL, Offline Policy Learning and Deep Deterministic Methods**

**Educative Bot Application**
*Open Source, github.com*

– Innovated an **End-to-End bot application** in Python to handle Ed-Tech customer in telegram mobile application

– **Designing NLP and ML** course track (25 percent completed) for testing the bot usage in effective content dispersal

## Freelancing Experience

**Prediction, NLP, Point Process Models for Unstructured News Data**
*Metadata.ai Team*

– **Scraped** web to collect raw news data. Implemented **clustering algorithms(tf-idf)** and text feature extraction(**Glove Vectors**, Parsing)

– Conceptualized different ideas to achieve fullest exploitation of textual news data

**Generation of 3D animations for Schrodinger Equation**
*Client: Fred Rassaii, United Kingdom*

– Solved **3-D Schrodinger equation** in variable time and space setup and interpreted the results in **3D animation in python**

– Discussed results with client by generating a series of **latex** files

**Machine Learning and Deep Learning Models for Pixel-Wise classification**
*Client: Unifie App, India*

– Formulated Machine learning algorithms like **Gaussian Mixture models**, k-Means , one-class SVM and Perceptron algorithms to achieve **accurate Pixel-Wise classification**

– Worked in a cross-functional team to develop **U-Net**(DNN) model, also explored FCN-32 model

**DNN Models for Educative Adaptive System**
*Client: Jestha Boyedhur, Mauritius*

**Feature Engineering for Pharma Text Data**
*Client: Amit Patel, United Kingdom*

**Solving Gradients**
*Client: Sewagi, United Kingdom*

**Other Projects**

**ML, NLP Models for Legal Contracts** : Vijay Sampathkumar, USA

**Vehicle Detection on Highways** : Umair, Pakisthan

## Achievements and Competitions

**EXL Excellence Quotient-2017** *Feb 2017*
*EXL Inc, Delhi*

- **National winners** among IIT's/NIT'S to participate in the all-India 3-stage Machine learning challenge
- Presented a data driven business solution involving data pre-processing, feature engineering, natural language processing and data modelling
- Special mention for visualizing extracted and existing features using a **innovative dashboard**
- Conferred with PPI Offer

**ZS Data-a-thon-2017** *Aug 2017*
*ZS Associates, Pune*

- **Winner** in the all-India 2-stage Datathon challenge held in ZS Associates, Pune
- Extracted features using **glove vectors**, sentiment analysis
- Developed a prediction model to correctly classify the blog-posts and presented the same
- Conferred with PPI Offer

**NASSCOM Competition-2016** *June 2016*
*NASSCOM, Banglore*

- **Placed 5th** in the all-India 2-stage NASSCOM challenge
- Formulated an end-end pipeline to predict the Event/Non-Event of lung cancer
- Identified events of lung cancer with **F1-score of 0.94** using extreme gradient boosted trees

**Competitions and Hack-thons**

**-Data Mining Cup** : Placed 2nd in India and Below 50 worldwide *2016,17*
**-GE Healthhack** : Placed in top 5 finalist Teams *2017*
**-IT Rajasthan** : Placed in top 5 finalist Teams, Opportunity to meet Chief Minister of Rajasthan *2017*
**-Zafin Tech, Kerala** : Placed in top 5 finalist Teams *2017*
**-ML-2, Hackerearth** : Placed 2th *2017*
**-Analyze This: Amex** : Conferred with Honourable Mention *2016,17*